

DOCUMENT RESUME

ED 174 114

HE 011 456

AUTHOR Pace, C. Robert
TITLE The Other Side of Accountability: Measuring Students' Use of Facilities and Opportunities. AIR Forum 1979 Paper.
PUB DATE May 79
NOTE 18p.; Paper presented at the Annual Forum of the Association for Institutional Research (19th, San Diego, California, May 13-17, 1979)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; *College Students; *Educational Accountability; Educational Facilities; Educational Opportunities; *Facility Utilization Research; Higher Education; *Institutional Research; *Measurement Instruments; *Student Behavior; Student Development; Student Motivation
IDENTIFIERS *AIR Forum 1979

ABSTRACT

A set of measures was developed to assess the quality of student effort in the utilization of the facilities and opportunities available in the college setting. The measures are based on the assumption that students are accountable for the amount, scope, and quality of effort they invest in using the available resources for their learning and development. Accountability for achievement and related outcomes must consider both what the institution offers and what the students do with those offerings. The measures were developed, pretested, revised, and administered to samples of undergraduates at 14 colleges and universities. From analyses of the pre-test data, it was determined that the scales are discriminating, reliable, and valid, and that quality of effort is clearly related to student development and achievement.
(Author/SW)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

ED174114



THE ASSOCIATION FOR INSTITUTIONAL RESEARCH

This paper was presented at the Nineteenth Annual Forum of the Association for Institutional Research held at the Town and Country Inn in San Diego, California, May 13-17, 1979. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of Forum papers.

Mary Corcoran
University of Minnesota
(Editor, AIR Forum Publications)

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY

AIR

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)."

THE OTHER SIDE OF ACCOUNTABILITY: MEASURING STUDENTS'
USE OF FACILITIES AND OPPORTUNITIES .

by C. Robert Pace
Director, Laboratory for Research on Higher Education
University of California, Los Angeles
405 Hilgard Avenue
Los Angeles, California 90024
(213) 825-8331

Abstract

All learning and development requires an investment of time and effort by the learner. Colleges and universities are accountable for the resources and facilities, the programs and procedures, the stimuli and standards they provide for student learning and development. The students are accountable for amount, scope, and quality of effort they invest in using the facilities and opportunities that are available in the college setting for their learning and development. Accountability for achievement and related outcomes must consider both what the institution offers and what the students do with those offerings. A set of measures to get at this concept of quality of student effort has been developed, pretested, revised, and administered to samples of undergraduates at 14 colleges and universities. From analyses of the pre-test data, it has been determined that the scales are discriminating, reliable, and valid, and that quality of effort is clearly related to student development and achievement.

Efficiency, productivity, accountability--these are all common words in much of the rhetoric about higher education today. Freshmen are called input; graduates are called output. Productivity is good if retention is good. Efficiency is good when resources are not wasted on students who subsequently leave or fail. If the student doesn't learn, it's because the teacher hasn't taught effectively. The institution is accountable for producing graduates who get good jobs and have successful careers. Or, from the consumer's point of view, if I come to your school, what will I get out of it? And if I have to pay more for it, will I get more out of it?

There are many questionable assumptions in this common rhetoric. It assumes that leaving college before getting a degree is a sign of failure, when in many cases it may be a prudent and well-informed decision. It assumes that professors produce learning. It assumes that the college, not the national economy, controls the job market. It assumes that if you don't benefit from going to college, it's their fault. It assumes that the student is buying a product, when actually the student at a later point in time is the product.

Colleges are, of course, accountable for a lot of things. They are accountable for the resources and facilities, the programs and procedures, the stimuli and standards they provide for student learning

and development. But surely the students are also accountable for the amount, scope, and quality of effort that they invest in their own learning and development, and specifically, in using the facilities and opportunities that are available in the college setting. Accountability for achievement and related student outcomes must consider both what the institution offers and what the students do with those offerings.

It's my impression that many institutional research and evaluation offices are mainly immersed in what I would call operations research, although that might not be the current name for it. In any case, the concern is with describing and analyzing how the institution works and what it costs--for example, monitoring the pattern of student flow through the institution, the rates of student retention and drop-out, faculty-student ratios, instructional costs per student credit-hour, and many other elements that provide useful and essential information for administration, resource allocation, and planning. This information, however, does not deal directly with student learning and development, which I assume is one of the major educative purposes of the institution. There are standardized achievement tests, such as those in the Undergraduate Assessment Program of Educational Testing Service, and various measures of personal traits, such as the Omnibus Personality Inventory, which could be used; but if they are widely used by institutional research offices, I confess I am not aware of it. And even if they were widely used, my initial statement about the other side of accountability, namely, students' use of facilities and opportunities,

would remain unanswered. What I would like to do, then, is to describe a set of measures we have developed to get at this potentially important variable called quality of effort--first, the rationale behind it, second, the nature of the measures and their reliability and validity, third, some preliminary relationships between quality of effort and attainment, and finally, some suggestions about what one can do with all this.

All learning and development requires an investment of time and effort by the student. Time is a frequency dimension; effort is a quality dimension. Some kinds of effort are potentially more educative than others. Effort at what? The college experience consists of the events that occur in a college environment. The relevant experiences for our purposes are ones that stem from events and facilities and conditions which the college makes possible, and which are intended to facilitate student learning and development. The most salient of these events and experiences are clustered around a number of fairly common behavior settings. A behavior setting is a place, a physical setting, in which certain types of activity typically occur. Typical behavior settings in a college or university include such obvious facilities as classrooms, libraries, laboratories, cultural facilities, student unions, athletic and recreational facilities, residence units, and perhaps others. Then there are other events and experiences which are not necessarily connected with a specific facility, but are nevertheless important. We can think of these as opportunities for personal experiences and interpersonal associations such as: contacts with

faculty members, involvement in clubs and organizations, experiences in writing, the breadth and depth of student acquaintances, opportunities related to self-understanding, and the general nature and level of student conversations. These were the facilities and opportunities we selected for our inquiry--selected because they seemed to represent a reasonably broad and important, yet manageable, array of facilities and opportunities in the college setting.

How, then, does one measure quality in the use of these facilities and opportunities? Basically what we have done is quite simple. We have devised brief activity checklists for each topic, to which students respond by indicating how often they have engaged in each activity during the school year. The concept of quality of effort guided the construction of these checklists. Let me describe them briefly.

Consider, for example, the library as a facility. A library presumably has certain purposes. It has certain properties as a repository and a resource. To what extent do students use it to capitalize on those properties? Some students may use the library building simply as a convenient and quiet place to study materials they have brought with them. This is a use of that particular facility which has no connection with its purposes as a library. Others may use the library only to read something that has been explicitly assigned, complete with reference and page numbers, by some instructor. This makes some use of the library as a repository. Still other students may discover that the library is a resource offering exciting avenues for exploration: examining indexes and guides, following up on various references,

looking for materials under different headings, browsing in the stacks and taking out something because it looked interesting and having that lead on to something else. The quality of effort dimension with regard to library use may well be the degree of independent exploration, or, to put it another way, using the potential which a library has to offer.

Consider another area, namely, classroom learning. Trying to explain the material to another person or making outlines from class notes and readings are higher level cognitive activities than merely taking notes in class or underlining points in a textbook. So the underlying quality dimension with respect to classroom learning is the level of cognitive effort.

What about some of the other facilities? For science laboratory, the underlying quality dimension is from more or less routine assignments and preparation, to activities that involve efforts to improve laboratory skills, and more independent use of lab facilities. With respect to student union, the activities range from casual and informal use to more programmatic use such as attending events and participating in meetings. For residence units the underlying quality dimension runs from what we could call general socializing to more personal exchanges involving such activities as helping and sharing and studying together and working on projects. Efforts to make contact with faculty members out of class range from fairly routine and casual--asking for information related to the course, such as grades, make-up work, assignments, etc., or just saying hello or visiting informally after class--to more serious contacts such as talking about ideas for a term paper

or a project, discussing career plans and ambitions, inviting criticisms, and even discussing personal problems or concerns. To do these latter things involves more initiative, more effort on the part of the individual. Or consider clubs and organizations: the underlying quality dimension runs from general awareness of events and organizations to working in the organizations, discussing programs, and considering why some programs are successful and others aren't. For experiences in writing the underlying quality dimension runs from a general concern with words and grammar and revision, pretty much by yourself, to seeking criticism from others and a greater concern with style. Activities related to self-understanding range from general curiosity about one's own behavior and others' to more focused and expertly informed sources of self-understanding which one might get from reading articles or books, or taking a test to measure one's abilities or interests, and talking with a counselor or some other specialist about problems. With respect to student acquaintances, the scale runs from what I would call breadth of acquaintances--that is, making friends with different kinds of people--to greater depth of acquaintances involving serious conversations with people who differ a lot from you. We have another scale called "Topics of Conversation." What do students talk about? The topics range from personal and interpersonal topics of fairly immediate experience to intellectual and cultural topics concerning values and social issues. Then we have another little scale which concerns information in conversations, and that is the extent to which knowledge and expertise are brought to bear in those conversations.

Overall, the scales are intended to provide a systematic and structured and reliable inventory of the amount, scope, and quality of student effort and experience. To each activity in these various categories, the student responds by indicating "never," "occasionally," "often," or "very often." Never gets one point, occasionally gets two points, often gets three, and very often gets four. The student's score on a particular scale, then, is simply the sum of those responses. A high score can only be obtained by engaging in the higher level activities, and therefore the score reflects the quality of effort and experience and not merely its frequency.

In developing preliminary versions of these scales, we sought advice about what the relevant activities might be. For example, we talked to the librarian about library use, to people who teach science lab courses about science labs, to student groups in the dormitories about what they thought would be important in terms of assessing the quality of experience that people have in that setting, and so on. We talked to psychologists about the kinds of activity most likely to enhance personal development.

We tried out the preliminary check-lists in a dozen to two dozen colleges and universities in various parts of the country, and we got from 250 to 450 student responses to each of the check-lists. From these preliminary versions, we selected the best items for the final scales, and put them together in a questionnaire. Without burdening you with details of our analysis of the pre-test results, let me just say that for each of these brief 10-item scales, all the items within

a scale correlate positively with one another; all the items correlate positively with the scale score; all scales consist mainly of a single dominant factor; and all scales have a reliability of .75 or higher, and most of them (11 of the 14 scales) have reliabilities in the eighties and low nineties. Those are pretty nice reliabilities for a 10-item test. The reason they can be so reliable lies in the nature of the scale; for the scale is hierarchical in character, so that involvement in the higher level activities almost certainly also includes involvement in activities that require less effort and have a lower quality. So, the scales are good measures. All the items are discriminating. They fall primarily along a single hierarchical dimension, and they are very reliable.

What about validity? There are really two or three sources for making some judgment about that. The first and most obvious is what the psychometricians refer to as content validity. You look at the items and at the topic of the scale and you decide that the items are relevant to the topic. It's just like somebody said, "Here's a test that's supposed to measure your knowledge of American history." You look at the test items. The test items refer to events in American history. So you conclude that the test has some obvious relevance to its intent. Another way of looking at validity, and a much more complex way, is what the measurement people call construct validity. That means the extent to which the results from these measures fit into a known network of relationships from previous research, whether the measures produce results one would predict from theory and previous knowledge. There have been a lot of studies of college student

life and student development during the college years, and from these studies we know that there are important differences between resident and commuting students, the resident students being much more involved; between full-time and part-time students; between lower division and upper division students; between students in different major fields, and so on. One of my students, Jon Shaver, did a doctoral thesis which he finished last fall, using the results from the preliminary versions of the scales, in which, based on the literature, he predicted what the results should be. With respect to the course learning scale, you ought to find higher scores among full-time students than among part-time students, you ought to find higher scores among residents than among commuters. If there is any kind of intellectual progression in the college experience, you ought to find higher scores among upperclassmen than among lowerclassmen. With respect to library use, you would expect people in humanities and arts to have higher scores than people in vocational or technical subjects. In the use of cultural facilities and science labs, the results would be related to the student's major field. He made predictions of this kind for all of the scales. What he found out was that that's exactly what happened in just about every comparison he made. Some of the differences were not large, but they were in the right direction, and in most cases the differences in mean scores on the scales, let's say between lower division and upper division or residents and commuters, or whatever the comparison might be, were anywhere from about a fifth to more than half a standard deviation in size. So we did that exploration of construct validity.

The other thing you have to consider, if you're pretending to measure something, is that you'd better find individual differences. That's really the first thing you have to know. If you give people a test and they all come out the same way, you haven't measured anything. We discovered, at the very beginning, that on every scale there was a wide range of scores, extending from almost the highest possible score one could get on the scale to the lowest possible score, with the mean scores pretty much around the center of the scale, and with generally quite normal distributions. Whether we looked at our total composite population, or whether we looked at more homogeneous segments of it such as men only or women only or upperclassmen only or residents only or science majors only, we found a reasonable spread of individual differences. So we were indeed measuring something; and we think from opinions of its content validity, and from the data relating to construct validity, that there is indeed a variable which one could call quality of effort, and that we have discriminating measures of it.

The final questionnaire which we are now using consists of 14 scales measuring quality of effort, plus various background information about the respondents, a brief section characterizing the college environment, and a section on student's estimate of gains or progress toward common and important objectives such as critical thinking, broad general education, effective writing, self-understanding, understanding other people, etc.

During March, April and May this spring 10,500 questionnaires were distributed to representative samples of undergraduates at 14 different

colleges and universities. The institutions were the University of California at Los Angeles, the University of California at Irvine, Indiana University, California State University at Long Beach, California State University at Northridge, California State University at Fresno, Los Angeles City College, Pierce College, Pepperdine University, Occidental College, St. Olaf College, Macalester College, Amherst College, and Mercyhurst College in Pennsylvania. Results for all this testing will be on tape by early June and will be analyzed during the summer.

A preliminary edition of the final questionnaire (about 90 percent identical in content) was tried out in one large undergraduate class at UCLA last fall. We asked the students to respond to the activities by indicating how often they had done them during the past year. There were about a hundred students in the class who had been at UCLA last year, and it is their responses which we analyzed. We were especially interested in seeing whether quality of effort was related to estimates of gain or progress toward related objectives. Let me give you a few examples. Scores on the classroom learning scale correlated in the high fifties with such outcome measures as critical thinking, self-understanding, the ability to find information, and effective writing. Quality of effort with respect to faculty contacts correlated in the 40s with critical thinking, and the ability to find information. Efforts to broaden and deepen one's acquaintances correlated in the 40s and 50s with estimates of progress toward such outcomes as understanding different philosophies and ways of life, and understanding other people.

Scores on the science lab scale correlated in the 50s with objectives related to science. Scores on the scale of use of cultural facilities correlated in the 50s with objectives related to the arts and to literature. The quality of effort score with respect to personal experiences or self-understanding correlated in the 40s with an objective which had to do with self-understanding. And so it went. There was a network of relationships which clearly indicate that quality of effort is associated with the degree of gain or progress toward the attainment of related objectives.

We also looked at students' estimate of their grades. We divided this particular class into two segments--those who said their grades were mostly B or higher in school so far, and those who said their grades were mostly B- or lower. That division more or less split the group in half. On the quality of effort scales involving library use, contacts with faculty, classroom learning, and writing, in every instance the mean scores of the students who had made the higher grades were significantly higher than the mean scores of students who made the lower grades. Quality of effort pays off in achievement.

So much for what the instrument is like; what can you do with it? Its obvious purpose is to learn more about how students spend their time and the nature and quality of their activity. You can view it as an inventory of student life on the campus, a campus profile. Beyond that, however, if a college seeks to stimulate student effort of high

quality and believes that high quality is better than low quality, the results could be viewed as a measure of the college's success. And we know from these preliminary studies that quality of effort is related to performance and progress, and therefore the scores could be interpreted as evidence that student learning and development is very probably occurring in the directions measured by the scales.

There are a lot of specific uses that can be suggested. How fully students use the resources provided for their learning and development would be of special interest, I should think, to those who make decisions about resource allocation and who administer or direct those resources: librarians with respect to library use; student personnel staff with respect to dormitories, student unions, clubs and organizations, etc.; faculty and academic administrators with respect to course learning, contacts with faculty, library use, experience in writing, science labs, etc. For counselors and others who are particularly concerned with students' personal development, the scales related to personal experiences—to better self-understanding—and the breadth and depth of student acquaintances might have special significance.

For the college as a whole, the questionnaire may be viewed as an instrument for self-study and evaluation, its results providing a base for faculty and administrative discussions and insight. Periodic college self-study is now required by all regional accrediting associations, and increasing emphasis is being given to obtaining evidence of outcomes as well as processes. The questionnaire furnishes evidence directly related to that requirement and emphasis. It has outcome

measures in the form of students' self-estimates of progress toward common and important objectives, and it has process measures in the form of the amount and quality of effort they have invested in using the opportunities that are available to them.

By examining quality of effort and progress toward objectives in relation to a variety of background factors, much more can be learned. The data that we will be getting subsequently will enable us to answer some of these questions more firmly than just our single application in that one course last fall enabled us to do. Is quality of effort in academic activities greater among upperclassmen than lowerclassmen? What differences are there in relation to the student's academic major field or to whether one lives on the campus or away from it, or to whether one aspires to obtain an advanced degree after graduation, or to whether one works part-time? Are students' grades related to quality of effort or merely to amount of time spent studying?

Research on college outcomes and college effects has overlooked the role that quality of effort may play in determining those outcomes and effects. Given the existence of systematic and reliable measures of quality of effort, researchers can now include this dimension in their calculations, and the inclusion of this potentially significant variable may modify some of the conclusions that have previously been reported. Outcomes are surely determined by what the student does as well as by what the college does, and knowing what the student does is the other side of accountability.